The H*Wind Real-time Hurricane Wind Analysis System

Semi Annual Report for period June 2002- February 2003

1. Training

Much of the period during the season was spent on training. Hurricane specialists James Franklin, Miles Lawrence, and Richard Pasch received training and valuable feedback was received from Laura Salvador and SOO Rick Knabb, who also assisted in training.
The following received training:
Alison Krautkramer
Jorge Aguirre
Robbie Berg
Eric Blake
Dan Brown
Chris Burr
Hugh Cobb
James Franklin
Eric Holweg
Richard Knabb
Miles Lawrence
Rob Molleda
Martin Nelson
Richard Pasch
Stacy Stewart

2. Realtime analysis

104 Realtime Analyses were conducted during the 2002 hurricane season. HRD personnel completed most of the analyses but this is the first season in which many analyses were also conducted by TPC employees.

Atlantic
al03 Cristobal 3
al05 Edward 6
al08 Gustav 11
al09 Hanna 6
al10 Isidore 24
al12 Kyle 4
al13 Lili 36
al14 TD14 4
al95 Invest 1

Pacific
ep05 Boris 1
ep06 Elida 2
ep07 Noname 2
ep14 Kenna 4
wp09 Rammagun 1
wp10 Halong 1
2. Users Guide:

3. User Guide

Shirley Murillo developed the user guide which should be available on the web during the first week of March.

4. Progress on the prioritized list of NHC requirements

In November we met with TPC to discuss progress on the prioritized list and to discuss revisons based on feedback received during the 2002 season. Agreement was reached that most of the items on the list had been achieved and some others were now deemed to be of lower priority relative to others.

Status of JHT based on revised priorities stemmed from the meeting on Nov. 21, 2002
2/26/2003 Sonia Otero

Going over the list provided by Richard Knabb at the time:

JHT: Over and above all items listed below, of highest priority is the need to install the H*Wind database on the JHT server, the first step toward testing a fully functional version of H*Wind on the JHT server prior to possible operational implementation. The current target for completion of testing the H*Wind application on the JHT server is April 2003.

HRD: Oracle 9i database software was successfully installed on the JHT server in December 2002. However, the server did not have enough space in order to properly setup the schema, and consequently, test the data collection process. Jiing and Brian Maher were informed then of what is needed. As soon as we know that the JHT server is ready, we will continue.

Equally vital is to compile analysis FORTRAN code on HP architecture. Sonia will work on this with the necessary parties.

JHT: Item numbers for remaining items have been retained from previous version of list. Previous items not shown have been completed.

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2. Include user-defined reduction factors, based on altitude of observation and radius from center. H*wind would ask for a cutoff radius that would define the regions used for eyewall and outer reduction factors. Fixed reduction factors would be used within each region for a given flight altitude. Program would display these factors, in case the user wanted to modify them.

HRD: DONE 12/24/2002
Added a button "Back to defaults" to quickly return to default values. 1/8/2003
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3. New item. Add capability for each user to create their own separate analysis output that appears in that users own output directory on the website. A primary user for operational analyses, as well as individual users for research and training purposes, would each need their own output directory.

HRD: At the point where a user decides to do an analysis, Users will be prompted to choose either "Operational" or "Research". The operational selection will cause the analysis to be the operational product and placed on the intranet web site. If the user wants to redo the analysis, they can do another one using the same center time and it will replace the current one on the intranet site. The "Research" selection will cause the analysis to be placed in the users directory space.

Web site tree
Year--Event
|---Operational---"Current style" (mmdd)
|---Username
|---Operational---"Current style" (mmdd)
|---Research/Training---"Current style" (mmdd)

DONE 12/27/2002
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6. Automated storm track updates (done?).

7. Automated generation of time window, storm track, and data retrieval.
For example, if you initiate the program at 1330Z, the time window would automatically be set to be a six hour period ending at 1330Z (perhaps round the times to the nearest half hour?). The nominal time of the analysis would also be at 1330Z. Or, if the nominal time cannot be the same as the end time, then have the analysis interval be from 0800-1400, with a nominal time of 1330 Z.
H*wind would automatically extrapolate an end time position and a nominal position using the storm speed taken from the ATCF compute file. Program would then automatically load all observations during the time window. Also automatically load background field from the previous analysis. If the automated process didnt work well, the user could go back and manually adjust the track using existing tools.

6,7 HRD: Add a new item "AutoPilot" under the Operations menu. A drop-down list shows the eight standard analysis times (0130, 0430, 0730, 1030, 1330, 1630, 1930, 2230), and "Off". Upon selecting a time H*Wind will set the end and center times to the selected time and every 10-30 min will automatically check for the last six hours of data and update an extrapolated position for the end and center times). We will also provide a means to instantly check for new data and fixes "now".

DONE 12/27/2002
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8. Output results (radii, max wind) to ATCF fix format message.

Output text files can be placed on the JHT server version of H*Wind.
HRD is asked to contact Jiann-Gwo Jiing to coordinate where the text output will be placed, for him to then consider an approach for possibly testing its use in ATCF.

HRD: The actual production of the file following the latest format is done. I sent James Gross on 1/24/2003 a sample ATCF file for his review. No response yet. As soon as I receive approval, it is easy to coordinate final location. Sonia will send reminder to James Gross.
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9. Restatement of old item 7. Output display to N-AWIPS. We need real-time access to the gridded version of each analysis output (generated by the primary operational user, see previous item above), for us to convert it to gempak gridded format. Also needed, for each analysis run by the primary operational user, is real-time access to a text file with all of the information used to annotate the graphical analysis output (i.e., top header with storm name, analysis time, list of data upon which analysis was based; wind radii table at top left of graphic; and max surface wind information below graphic).

HRD: We will provide Alison with the location of gridded files and their format. We will discuss how to provide the annotation text file.
On a related note, JHT/TPC staff may in January demonstrate H*Wind to the NCEP/NCO Computer Development Branch (N-AWIPS/GEMPAK developers), so that they are aware of its capabilities. However, such interaction is not required to complete this enhancement item.

DONE:
- gridded files (operational and research) easily accessible on cat5.nhc.noaa.gov as of 2/26/2003.

Comment: contents of requested annotation file are approximately included in ATCF fix format contents, already implemented (request #8). We should discuss exactly what is needed and try not to duplicate. Sonia will contact Alison.
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14. New item. Data Views window, Track tab: If the user adds a fix for a future time via extrapolation, and then a new fix later comes in, but still before that extrapolated time is reached (e.g., extrapolate to 0130 UTC at 0030, and vortex fix arrives at 0100), the extrapolated point is sometimes moved and/or the storm speed and heading at that extrapolated time are modified automatically. The user should be able to determine whether the extrapolation gets updated, or whether extrapolated points retain their original location and chosen speed/heading.

HRD: We will remove the automatic updating of the extrapolation. The user can re-extrapolate if they wish. In order to decrease the number of clicks, we will allow removal of begin and end fixes. In both cases, the new begin and end fix will be the next or the previous fix, respectively. As an example, we have a 0130 extrapolated position from a 0030 vortex; 0130 is the end and center position for our window. Then, a new 0100 ATCF position arrives. The user can quickly select and remove the 0130 position, which will revise the new end and center positions to point to the 0100 position. The user can then re-extrapolate to 0130 based on the latest information.

DONE 12/30/2002
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16. Scan for and include analysis maximum wind on the graphical output with the radii information.

TPC requests that the annotation beneath the graphical output include values and locations for both the "maximum observed adjusted wind" and the "maximum analyzed wind".

HRD: DONE 1/2003
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17. A default set of data types that are already checked off.

HRD: The default list is Air Force flight level, NOAA flight level, ships, moored buoys, C-MAN, QScat (non rain flagged), GOES sfc, GPS mbl, SFMR, and GPSwl-150.
TPC requests adding to the above list the "GPS oceanic" platform.
After that addition, the list is agreed upon, and the remaining task is to have these platforms automatically checked off by default after the user first loads obs in the Observations tab.

DONE 12/30/2002
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20. On a monitor, the observations are hard to see against the white background of the map. Have you tried using a black background? We may also want to change the default colors for the most important data types (recon, in particular, is hard to see against white background). (For printing, though, white background is obviously better.)

HRD: This is not feasible given the resources.
As an alternative, TPC will provide a list of default colors for each platform, such that the appearance of the observations is optimal against the white background.

-> We have not received a list of default colors for platforms from TPC.
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23. Need a glossary of H*wind terms. For example, what is a shapefile?

HRD: As of 3/1/2003, we will provide an H*Wind User Guide on PDF, posted on http://cat5.nhc.noaa.gov.
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25. Rephrased previous item. QC Client window, Tools menu, Group Flag: Modify or replace the flag and unflag icons/pointers such that they have a more definitive point, as with an arrow.

HRD: Right now this happens only on HPs. We will evaluate possible solutions.
This issue will be addressed on three fronts: 1. For the problem of oversized/distorted icons on HPs, Sonia Otero will contact Brian Maher at TPC with a description of the problem, so that he may forward it to HP support. 2. HRD will modify the design of the icons to indicate as precisely as possible to the user where the icon is pointing; this remains a particular problem for the flag/unflag (sad/happy face) icons, even on platforms other than HP. 3. HRD will work on making the icon turn back into a conventional arrow (and not the icon for the selected map tool) whenever the icon leaves the map background, for easier pointing on all menus, scroll bars, etc. throughout the rest of the application.

Item 1. No success yet; needs further investigation.
Item 2. DONE 12/31/2002
Item 3. DONE 1/3/2003
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28. Provide a progress bar or other indicator when loading from the database (or some feedback that the process is functioning normally).

HRD: DONE 12/31/2002
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37. New item as of 11/21/2002. Because there are two places where a pressure interval may be set, one controlling what data get displayed and one controlling what data get analyzed, it is possible for the user to lose track or become confused about what data are being analyzed. At the point where the analysis is done and a pressure interval is selected, the observation display should be updated to show only those observations that are going in to the analysis.

HRD: DONE 12/31/2002
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5. Remaining Priorities

Over the next few months it is very important that NHC procure the needed hardware for the JHT server and that NHC continue testing H*Wind. This will be the final chance to provide feedback to avoid surprises later on; realtime analyses can be conducted in active southern hemisphere basins.